Technical Documentation

for metraTec IPS Receiver

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1 General Information / Security Advice

1.1 Notes on the use of this documentation

This user manual and integration guide uses different symbols to point out potentially dangerous situations. The following signs and symbols are used throughout the document.

ATTENTION

Declares a potentially hazardous situation. If this is not avoided, the product or something in its surrounding could be damaged.

NOTE

Declares notes for the user as well as other useful information, where no harmful or dangerous situations can be expected.

1.2 Security Advice

The IPS Receiver was not designed for use in dangerous environments. Using this product in applications where a failure could directly result in severe injuries or death ("high risk activities") is not permitted. This includes but is not limited to applications in nuclear facilities, flight control systems, life support systems or weapon systems. The manufacturer denies the suitability of this device for such scenarios.

1.3 Export Restrictions

The IPS Receiver contains components that underlie US Export restrictions. It is therefore forbidden to export the product to countries that are on the US trade embargo list. The same applies to any countries that are on the EU embargo list.

1.4 Further Documents

For operation of the IPS Receiver it might also be useful to read the metraTec Protocol Guide, which explains the protocol used to control the device in full detail.

Furthermore, the IPS Receiver internally uses a metraTec TUC module for Ethernet communication.

All further documents for both the TUC and the protocol can either be found at the metraTec product web site or are listed at:

http://www.metratec.com/en/support/downloads/documentation.html

2 Product Description

The Indoor Positioning System from metraTec (IPS) provides a tracking system by radio technology for persons and objects inside buildings with a flexible range of application. For this, IPS Receivers are mounted at the relevant places inside the buildings, monitoring their surrounding area for signals of IPS Beacons. As soon as a beacon comes into range, the receiver transfers the beacon's ID as well as reception strength (RSSI) to a connected server for data processing.

Operation of the IPS Receiver is possible by supplying 24 V or directly by Power over Ethernet. A version with IP 65 is available on request, enabling usage in dirty surroundings or outdoor applications.

2.1 Intended Use

Receiver of signals from metraTec IPS Beacons operating according to the IEEE 802.15.4 standard with a proprietary protocol for tracking of persons and objects inside buildings.

2.2 Technical Specification

Operating Voltage	24 V DC or PoE (Power over Ethernet)
Communication Protocol	IEEE 802.15.4
Operating Frequency	2.45 GHz
Channels	Ch. 11-26
Power Consumption	1.2 W
Interface	Ethernet
Dimensions	110 x 110 x 32 mm
Operating Temperature	-40 °C bis +85 °C
Protection	IP 40 (IP 65 optional)
Conformity	CE by R&TTE (including ETSI EN 300 328)

2.3 Scope of Delivery

The IPS Receiver comes with the following parts:

- IPS Receiver
- Documentation, drivers and demo software are available via download from metraTec's website

2.4 Accessories

Compatible to the IPS Receiver metraTec offers accessories for configuration of full indoor positioning systems:

- 220 V AC to 24 V DC external power supply unit (Art.-Nr. 2200 0089)
- IPS Beacon S (Art.-Nr. 2200 0312)
- IPS Beacon L (Art.-Nr. 2200 0008)

3 Power Supply and Electrical Specification

There are different possibilities for voltage supply to the IPS Receiver.

3.1 PoE (Power over Ethernet)

For Power over Ethernet, the voltage supply of the IPS Receiver goes via the network. For this, the receiver has to be connected to a PoE switch using the IEEE 802.3af standard. Shortly after connection, the green LEDs should start flashing.

3.2 24 V Supply

The IPS Receiver can also be powered by a 24 V DC voltage supply, e.g. for testing purposes, or if the required cable length to the PoE switch is too high. Also, if the receiver is to be operated in wireless mode (Firmware Option „Wireless Receiver"), voltage supply has to be provided by an external 24 V DC supply.

metraTec offers the required 24 V DC supply as accessory (Art.-Nr. 2200 0089). If not using a metraTec power supply make sure your power supply is of high supply voltage quality.

4 Communication

4.1 Ethernet

Communication of the IPS Receiver goes via the Ethernet connection to a host for data evaluation, e.g. with metraTec's middleware IPS Engine or a custom software.

Factory IP address of the IPS Receiver is *192.168.2.239*

For changing the address, access the above IP address via web browser. You will be asked for a password. Default password is „tucadmin“. You can now change the IP address via the web mask.

In case the changed address got lost, the „TUC Config Manager“ software from metraTec can be used to search for the device and assign another IP address. Software and more documentation can be found here:

http://www.metratec.com/en/support/downloads/software.html

4.2 Wireless Receiver

IPS Receivers can also be operated in a wireless communication mode („Wireless Receiver“). The same hardware can be used, running an alternate firmware version. In this case, IPS Receivers do not have to be connected via Ethernet, but only with a 24 V power supply. The receivers now function as transmitters as well, transmitting the data received about beacons in range and their signal strength to other IPS Receivers that are connected to the Ethernet. From there, the data is forwarded to the server.

Thus, a "common" IPS Receiver with Ethernet connection has to be in range of the wireless receiver for this to work.

5 Operation / Configuration

As soon as the IPS Receiver is connected to a power supply, it searches for data of IPS Beacons in reach. If receiving a signal, the data is transferred via Ethernet or wireless.

To receive the data it is sufficient to connect via a software capable of reading from an Ethernet socket connected to the device's IP address on TCP Port 10001. For all beacons in range, their MAC Address and the signal strength (as a negative, 2-digit RSSI value) should be displayed according to the beacon's ping rate. If the data comes from a wireless IPS Receiver, it starts with the MAC Address of the transmitting receiver.

For more information about the protocol commands for control of the IPS Receiver please refer to the according MPS Protocol Guide available as a separate document.

6 Further Notes

6.1 Environmental

Electronic devices like the IPS Receiver are covered by the (German) ElektroG (electronic waste law) as well as the European WEEE directive and as such may not be disposed of by way of the normal household trash. Instead they have to be recycled properly. For you as our customer this is no additional burden, however, as you can send the device back to us for proper recycling. We assure you that the devices received back will be recycled properly and in an environmentally friendly way. Our WEEE Registration ID is DE 56060482.

When selecting electronic components we additionally made sure that all components are free of heavy metals and other harmful substances as required by the RoHS Directive for many industries. Hence, our products are produced in the most environmentally friendly way possible.

6.2 Declaration of Conformity

The IPS Receiver complies with all directives and regulations applicable in the European Union for this kind of device. This especially includes all laws regarding use of spectrum and EMC. The product therefore bears the CE sign, as required by Directive 1999/5/EC (Radio & Telecommunication Terminal Equipment Directive).

The product is currently not registered for use in the US or Canada. However, metraTec is registered as a manufacturer of electronics at the FCC and IC. A certification of this product is therefore possible, if required. Please ask us or your system integrator for further information.

7 Version Control

Version	*Change*	*by*	*Date*
1.0	created	KD	03.05.2011
1.1	Note to IOs added	KD	03.11.2012
1.2	SRI/RRI added	KD	11.06.2013
1.3	Further Notes and Declaration of Conformity added, protocol commands externalized, hardware specifications corrected to new version, minor changes	CS	18.06.2015

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